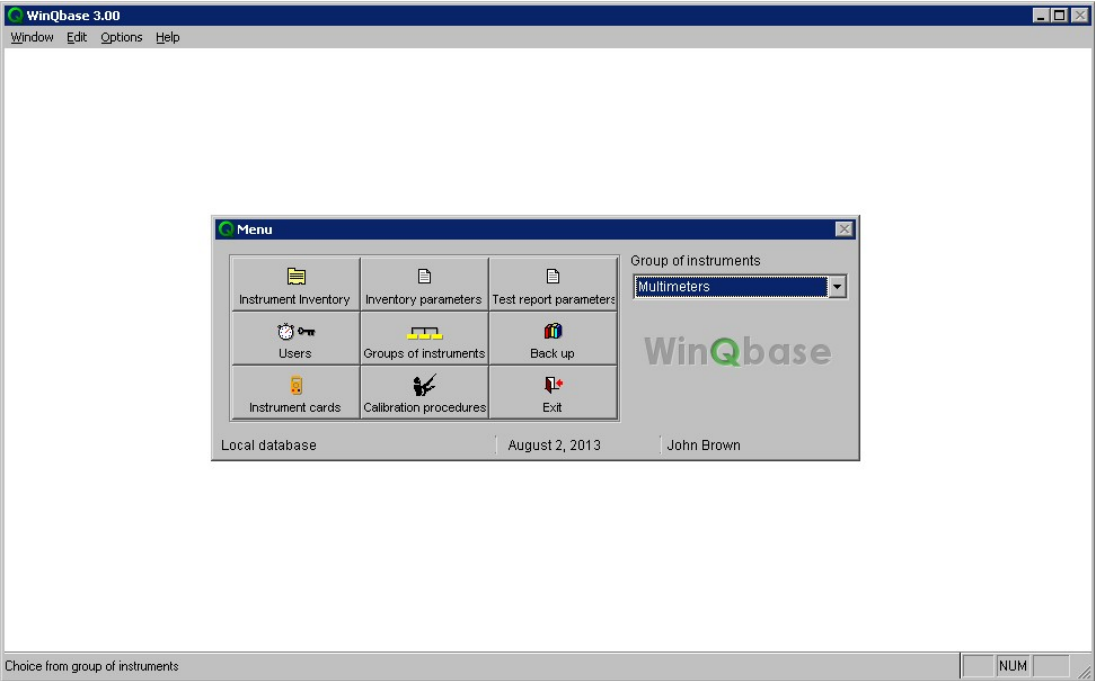


WinQbase / Caliber

Getting started



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1. Introduction

This instruction should help you to begin with calibration software WinQbase and CALIBER. The main aim is to introduce you into the procedures, which are used in this software environment.

Program components in MEATEST software

Basic components of calibration software are formed with following items:

- ***WinQbase***
is basic program module with inventory of instruments and inventory of calibrations.
- ***CALIBER***
is universal calibration program for automated calibration of electric quantity meters. It can be used either under WinQbase or as alone standing program. Some its features in both cases are different.

2 System installation and activation

Requirements

The system is supplied on a CD-ROM disc. The installation set contains all necessary programs, created database structures and other auxiliary files and programs. The installation requires Pentium 1.5 GHz, 1GB RAM, SVGA 800x600 at least. The program is designed for WINDOWS XP/Vista/7/8 operating system. During installation user must have Administrator access.

Installation process

Installation CD contains following types of WinQbase setups:

Full version (WinQbaseSetup.exe) – full version of the program with no limitation. This version requires registration code after first run.

Demonstration version (WinQbaseDemoSetup.exe) - in demo version only 2 Groups of Instruments can be created, 3 Instrument inventory records for each group and 3 Calibrations for each Inventory item. Also backup is restricted in demo version and database can be located only in local machine. This version does not require registration code.

Viewer (WinQViewSetup.exe) – only for viewing database. This version does not require registration code.

First install the program to all computers on which you wish to use the system (if you have more computers for installation). Every installation must be registered with its own unique “Registration code”. On the “SERVER” (a computer on which the database will be stored) “WinQbase Database” installation must be executed.

Complete installation of WinQbase consists of one obligatory installation and four optionally installations:

1. WinQbase installation
2. GPIB card installation (only if it is used, see Caliber manual)
3. VISA driver installation (only if it is used, see Caliber manual)
4. CAMERA installation (only if CAMOCR module is used)

Installation number 1 is obligatory. Installations number 2, 3 and 4 are optionally.

WinQbase installation performs user-friendly installation of the whole system. When you insert the installation CD-ROM installation menu will appear and you can select desired type of installation. If the menu is not displayed automatically, you can run installation directly from “Install\Software” directory.

First, the program displays operation license conditions and then requires you to enter a user name and a company name.

The next part of the installation is entering the name of a directory in which the program will be saved. We recommend you to confirm the offered directory.

The installation creates database programs, main database and auxiliary programs and files in the WinQbase directory. Separate directories “Archive1” and “Archive2” are created for back up in the “Data” directory.

Finally, a WinQbase program group is created, which is placed in the “Start”, “Programs” menu.

During the installation you can be asked for computer restart.

If you are using a National Instruments **GPIB** card or **Camera** module, install appropriate driver.

Uninstall WinQbase

To remove the WinQbase software from your system, you should use the "Add/Remove Programs" control panel in Windows ("Start -> Settings -> Control Panel -> Add/Remove Programs" from the Windows Start menu).

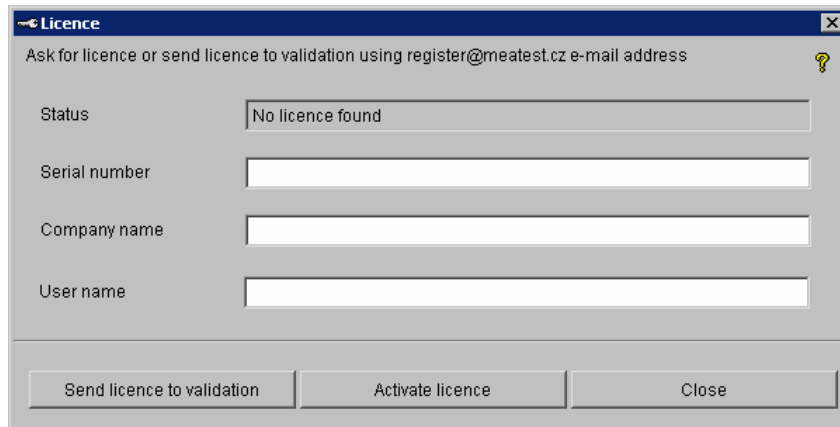
Program Caliber - module for calibrations

This program module is installed together with WinQbase.

Program registration

The program can be registered during its run by means of the “Help” menu and by the “About” item activation. The registration consists of two steps:

Step 1 – Company identification



The screenshot shows a Windows-style dialog box titled "Licence". The main text inside the dialog reads: "Ask for licence or send licence to validation using register@meatest.cz e-mail address". Below this text are four input fields: "Status" (which contains the text "No licence found"), "Serial number", "Company name", and "User name". At the bottom of the dialog are three buttons: "Send licence to validation", "Activate licence", and "Close".

Set the Serial number, Company name and User name who the license is to be registered to. Serial number you can get from “Licence agreement” which is supplied with program package. Press the button “Send licence to validation“. Program will ask for the path where to save the file with the information about the user. Send this file “SNXXXXXXXXX (QUERY).LCN“ as attachment to the email register@meatest.cz.

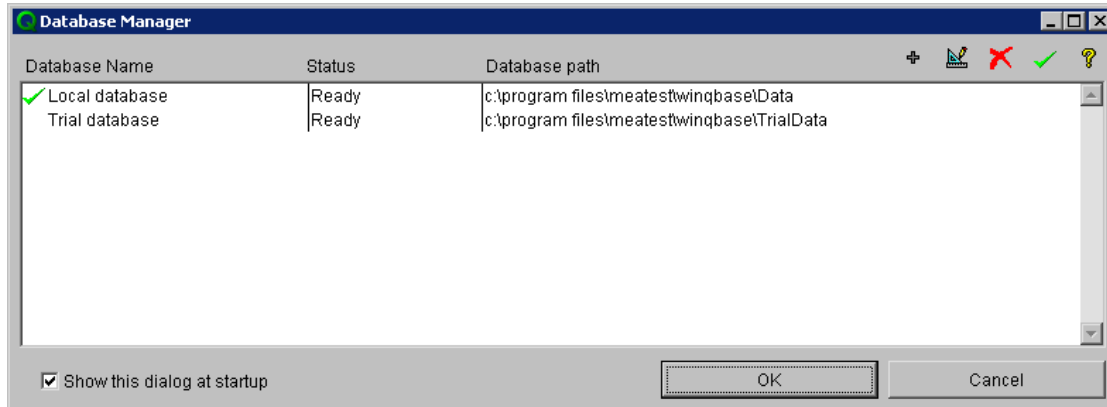
Step 2 – Licence activation

In response to the email you will receive the activation file “SNXXXXXXXXX (ACTIVE).LCN“. Use this file to complete the activation by pressing the “Activate licence“ button.

3 First start

3.1. Selecting database

After starting WinQbase software you must select the database.

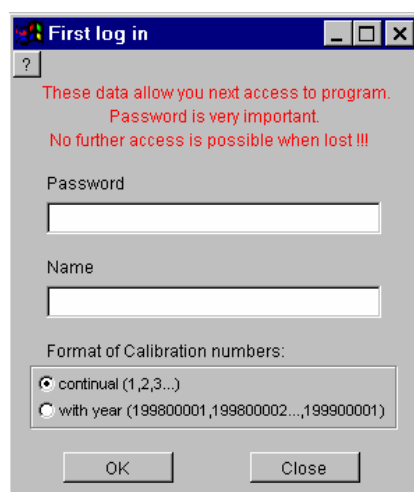


There are two databases included in install package. The first database is TRIAL database. In this database there are three samples of meters, units under test, recorded. Fields and items in WinQbase and Caliber module are mostly fill in. You can browse among the records, modify records, add new ones, calibrate and test the features of whole software. Every computer with WinQbase installation has its own TRIAL database.

The second database is named LOCAL database and is of the same structure, but it is empty and it is prepared for entering data of your own meters. In PC network there is no limitation. The database can be shared.

3.2. Password

At the first login, it is also necessary to enter a password and names of the person who will “supervise” the operation of the WinQbase environment. Later this person will be authorized



to make any changes to the system and determine access rights and passwords for other users. For that reason, write the set-up password down because you will not be allowed to enter the program without knowing the correct password. We should observe that the password is case sensitive.

If TRIAL database is selected, password is not required.

3.2. **Numbering of calibration certificates**

The user must also choose a method of numbering calibrations. Ascending numbering (1,2...) is offered automatically, however, you can choose yearly numbering (199800001,199800002....) where calibrations will be numbered from number one at the beginning of each year. For detailed information about protocol numbering see WinQbase User's manual.

Note: It is not possible to change the numbering method hence.

When you press the OK button the program checks the entered password for safety's sake and requires a confirmation. At the first startup, it is necessary to enter some basic data.



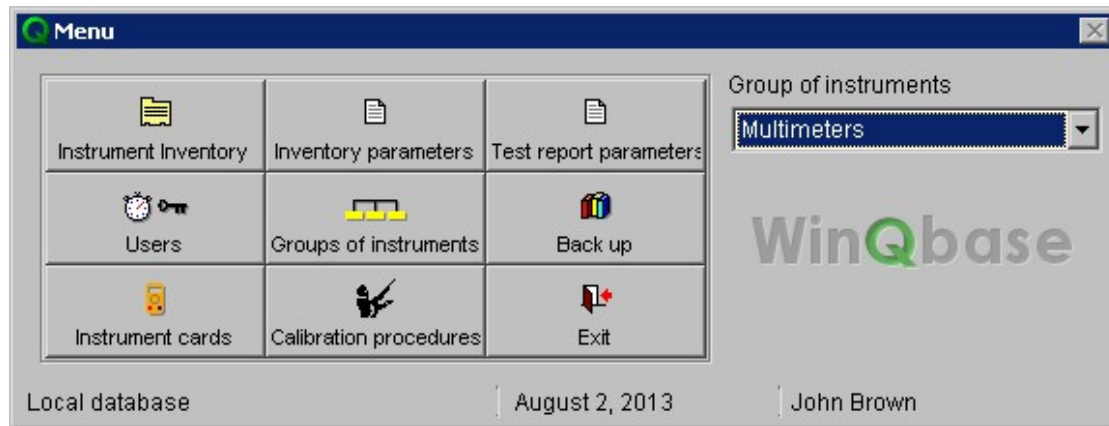
After confirming, WinQbase switches to main menu.

If TRIAL database is selected, method of calibration certificate numbering is not required and cannot be changed. Format of numbering is continual in row 1, 2,

4 WinQbase – basic handle

4.1. Main menu

Main menu has nine buttons and one field with Group of instruments. Group of instruments is basic sorting of meters in the database. Select an item, for example “Multimeters”.



Now you can access inventory of meters and calibrations.

4.2. Instrument inventory

Push the button Instrument Inventory. Form with sample of multimeter, unit under test will appear.

Note: Structure of database consists of inventory of instruments. Both unit under test and standard unit can be recorded in the database. Inventory of instruments consists of instrument records (cards). In the instrument record there is basic description of the instrument like type, SN, customer address etc.

To every instrument belongs inventory of calibrations in folder Calibrations and Supplements in the same named folder. In inventory of calibrations, you can find results of calibrations and its test report for selected instrument. In folder Supplement you can make any comments to the instrument, like repairs. this folder can be used for storing of calibration values of simple standards like resistance, capacitance, etc.





The screenshot shows the 'Instrument Inventory' window with the following data:

Instrument Inventory		Calibrations		Supplements									
Type of inventory	Internal	Inventory serial No.	1	HISTORY									
Quantity	Electrical	Asset number	ZET236	Version	5.2.2002 7:47:49								
Category	Unit under test	Documentation	<input type="checkbox"/>	Author	John Brown								
Model	Metex 3800	<table border="1"> <thead> <tr> <th>Calibrations</th> <th>Date</th> <th>Verify to</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/></td> <td>2.8.2013</td> <td>2.8.2014</td> <td>Passed</td> </tr> </tbody> </table>				Calibrations	Date	Verify to	Result	<input type="checkbox"/>	2.8.2013	2.8.2014	Passed
Calibrations	Date	Verify to	Result										
<input type="checkbox"/>	2.8.2013	2.8.2014	Passed										
Manufacturer	METEX	Traceability to											
Users item 1	.	For information measurements											
Users item 2		Periodical calibration not required											
First recorded on	5.2.2002	Customer	Specification										
Price	110.00	Mr. Benin	0.1%										
Serial number	AB2365414	BMT, a.s.	Comment										
Activated on	15.5.2000	Cejl 20	3 1/2 digit multimeter										
Discarded on	..	Brno											
		602 00 Phone											
		05-8752513											

At the bottom, there are navigation buttons (back, forward, first, last), a search icon, a 'Preview' dropdown, checkboxes for '1 record' and 'List', and 'Browse' and 'Close' buttons.

Viewing


You can view data of selected instrument. You can select another one by pushing the button:


-  Go to the first item.
-  Go to the previous.
-  Go to the next item.
-  Go to the last item.

Push the button BROWSE. List of instruments is displayed. You can set up the width of individual columns arbitrarily.

Select another instrument (set arrow to the desired row) and push ESC button. Instrument inventory form will appear again but with data of new sample.

Editing

You can edit active record. Push the button . You can edit all fields. The fields with white color you can edit without limitation. The fields with gray color can be edited too, but only values (data) from codebooks may be chosen. You can recall codebook by pushing the button "..."/> beside appropriate field.

Change for example Type of inventory from External to Internal. Push the button "..."/> beside the field. Use browse button or arrow buttons to select new data for this field. Push ESC button. New item is written to the field. Push the button . New version of instrument record is saved.



You can notice, that arrow button beside label HISTORY becomes black instead of gray. It means, that active record is not the first version. You have a look at previous one. Push black arrow button beside label HISTORY. Date and name of person, who modified instrument record is displayed. Label HISTORY becomes red. It is information that actually displayed record belongs to history, and it is not really active in database.

Note: Changing of not all fields will result automatic creation of History. Which fields create History you can find in operation manual of WinQbase or simply push the button F1 to open Help.

You can disable access to history record. Tick the item “Hide history” in top menu “Options”. Information about last version of active record is shown. You cannot browse in HISTORY. Cancel tick of “Hide history”. History records are accessible again.

To cancel edit mode without saving push the button



New record

You can create new record. Push the  button. Following menu will appear:

Now you can chose, either to create record for new instrument of the same type (select “New from old”), or to create record for another model (select “Manually”). “New from old” selection will result, that all data from active record will be copied to the newly created record, except Serial number and Asset number. This feature enables multiple creation of instrument records of the same type very easily.


After selecting, pre-set or empty form of new instrument will appear. You can enter data of new instrument. For gray fields use codebooks. It is not obligatory to fill in all field. At minimum gray fields and field of serial number must be fill in, otherwise you are not allowed to save the record.

When all desired data are entered, save record by pushing the button



New instrument is appended to the list of instrument. You can check it. Push the button Browse. List with instrument records including new instrument will appear.


Delete record

A record, which was once saved, cannot be deleted. It is supposed, that instrument have been used in calibration laboratory and using must be documented. However you can hide the record. Hidden record is record, which in fact exists in database, but it is not displayed. To hide active record, push the button “open eye”  .

Eye on the icon will close. It means, that this record is signed as hidden record. Not to display hidden records, tick item “Hide record” in top menu “Options”. Now only non-hidden records are displayed. Check it by pushing the button Browse.

Last calibration

In the form you can find information about date, validity and result of the last calibration of the active instrument.

 Calibrations	Date 13.9.2001	Verify to 13.9.2002	Result Passed except points
---	-------------------	------------------------	--------------------------------

If validity of the last calibration is still OK, field “Verify to” is green. If instrument doesn’t have valid calibration, a field is red.

You can disable calibration information on the screen. Push the button Calibrations. The whole block disappears. Push it once more and information is displayed again.

4.3. Calibration inventory

Push the folder Calibrations. Card of last calibration of the active instrument is displayed. In the card you can find all important information about process, conditions and result of last calibration.


The screenshot shows the 'Instrument Inventory' window with the 'Calibrations' tab selected. The 'Instrument Inventory' section on the left shows details for Calibration No. 50000002, including inventory serial No. 1, temperature 22.3°C, and humidity 56%. The 'Calibrations' section in the center shows the calibration procedure M3800, report name Caliber, result Passed, and calibrating person John Brown. The 'Supplements' section on the right shows a history of the calibration with version 2.8.2013 11:34:21 and author John Brown. Below these sections is a 'Test report' table with columns for Function, Range, Standard, UUT, Deviation, %spe, Allowed, and Uncertainty. The table contains several rows of calibration data for various voltage and resistance ranges. At the bottom, there are fields for Date received, Date of calibration (2.8.2013), Calibration period (12), Verify to (2.8.2014), and Station (Central station). The bottom toolbar includes navigation buttons, a 'Preview' button, and checkboxes for '1 record' and 'List'.

Function	Range	Standard	UUT	Deviation	%spe	Allowed	Uncertainty
VDC-2W	200 mV	20.0 mV	20.0 mV	10 uV	5	200 uV	62 uV ok
VDC-2W	200 mV	180.0 mV	179.8 mV	-200 uV	-20	999 uV	66 uV ok
VDC-2W	200 mV	-180.0 mV	-180.2 mV	-200 uV	-20	1001 uV	66 uV ok
VDC-2W	2 V	0.200 V	0.200 V	0.30 mV	15	2.00 mV	0.58 mV ok
VDC-2W	2 V	1.800 V	1.800 V	0.10 mV	1	10.00 mV	0.58 mV ok
VDC-2W	2 V	-1.800 V	-1.800 V	0.00 mV	0	10.00 mV	0.58 mV ok
VDC-2W	20 V	2.00 V	2.00 V	2.0 mV	10	20.0 mV	5.8 mV ok

Viewing

You can view calibration data of the selected instrument. If there is recorded more than one calibration, you can browse among them by pushing arrow buttons or by pushing the button Browse. Function is similar to the same function in Instrument inventory.

Editing

You can edit active record. Push the button . You can edit all fields. The fields with white color you can edit without limitation. The fields with gray color can be edited too, but only values (data) from codebooks may be chosen. You can recall codebook by pushing the button "..." beside appropriate field.

Function is similar to the same function in Instrument inventory. After changing active calibration record, history of this record is automatically created.

Parameters calibration certificate

A part of calibration record in calibration inventory, there are text information, which are inserted on the first page of calibration certificate.

Note: Result of calibration process is calibration certificate. Calibration certificate in WinQbase program consists of following parts.


- First page with general information, data of instrument under test, customer, calibration laboratory, etc.
- Second page, which contains text comment related to the calibration
- Test report, i.e. table with measuring and evaluating data.

Among information on first page belong:

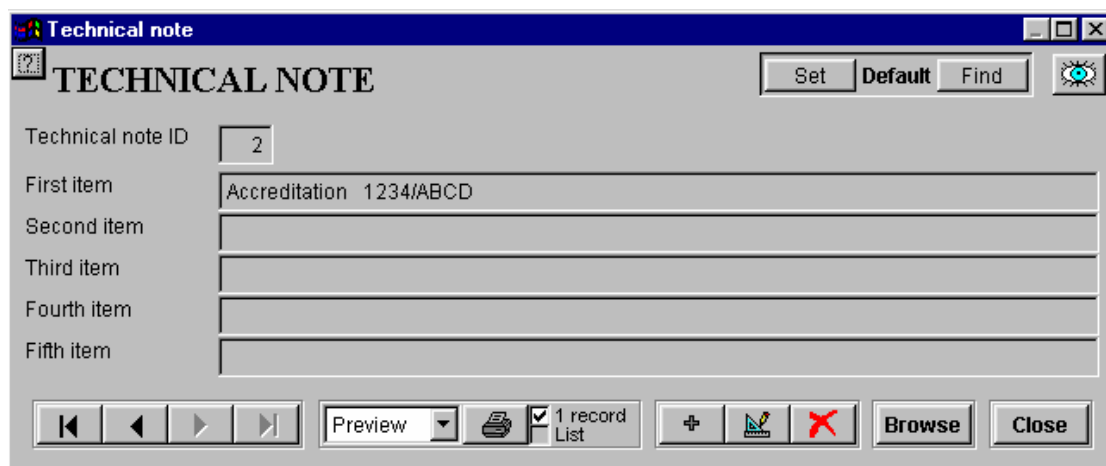
- Test report head, usually name of company, address, etc.
- Technical note, for example No. of accreditation approval
- Methodology, normally method of calibration
- Range of calibration like AC/DC voltage/current
- Chief, name of chief of laboratory.


These text information must be selected from codebooks. Push the button Parameters. Form of first page texts will appear.

Parameters	
Test report head	MEATEST, s.r.o. Calibration laboratory
Technical note	Accreditation No 321/99
Methodology	Direct measurement UUT with M-140 calibrator
Range of cal.	AC/DC voltage AC/Dc current Resistance, Capacitance
Chief	P. Schwartz

You can view it. Push the button Close. Now push editing button  and Parameters again.

You can edit parameters of the calibration certificate first page. On the left side, there are displayed currently valid texts for active calibration. You can change them. Push the button “...” beside the name of item. Form of appropriate codebook will appear.



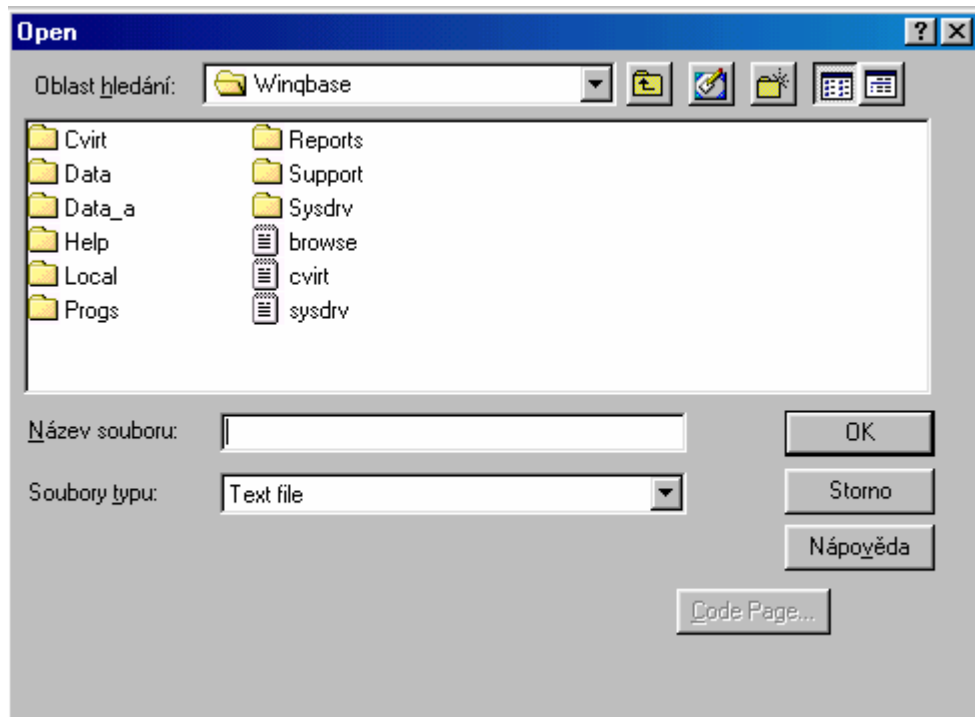
You can select any of items from the codebook. If you want to create new record in codebook, push the button “+”. New and empty form is displayed. You can enter any text. After finishing, save it by pushing the button 

Note: Structure of all parameters of calibration certificate first page is fixed. You cannot change it. For example, in the form above, you can enter any text into five rows, but you cannot add row and you cannot delete row. If you don't need all rows, don't fill in them. The space in the test report will stay empty. In fact you can remove any of the rows, but not here. See chapter about Calibration certificate editing in operation manual.

In the same way you can edit or set all items of calibration certificate first page.


Exporting of test report

Push the button Export. Window for saving the file will appear.



Select any directory and write a name of file, for example “test_1”. Confirm it with OK button. Test report, i.e. content of window Test report, is saved as text file under chosen name. You can open it in any text editor.

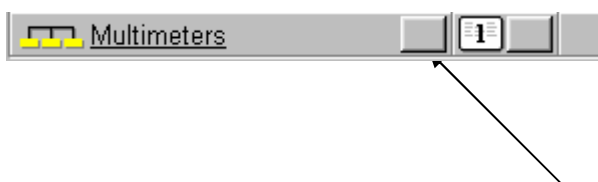
Delete calibration

Similarly to the instrument records, a calibration, which was once performed and saved, cannot be deleted. You can only hide the record with calibration. Hidden record is record, which in fact exists in database, but it is not displayed. To hide active record, push the button “open eye”  .

Eye on the icon will close. It means, that this record is signed as hidden record. Not to display hidden records, tick item “Hide record” in top menu “Options”. Now only non-hidden records are displayed. Check it by pushing the button Browse.

Single/multiple group of instrument displaying

In the upper part of calibration form, there is button for setting, if either records of one selected group of instruments will be displayed or records of all groups of instruments will be displayed.



Push the button. The icon disappeared, but the label “Multimeters” is displayed further. Now, you can view all calibrations of all groups of instruments. Label “Multimeters” means that currently displayed record belongs to the group of Multimeters. Use button Browse to display list of all calibrations.

Push the button again. Icon appeared. Now you can view only records in group of instruments “Multimeters”. Check is by pushing the button Browse.

If change of active group of instrument is required, you have to return to the main menu. Push the button Close. Now you are in main menu. Push the button Groups of instruments and select another one. Close the form by pushing the button Close. Enter into Instrument inventory, open the folder Calibrations. Now you can view calibration of the last selected group of instruments only.

Single/multiple calibration displaying

With next button you can control, if calibrations either for all instruments in selected group of instruments or for active instrument will be displayed. This feature is useful, when a lot of calibrations is recorded in database. You can simply select calibrations related to the active instrument.



Push the button. Icon with symbol “1” disappeared. You can view calibrations of all instruments in selected group of instruments now. Check it by pushing the button Browse.

Push the button again. Icon will appear. Now you can browse in calibrations of active instrument only.

Note: Both last two functions can be recalled in folder Instrument inventory and in folder Supplements with the same effect.

4.4. Supplements

Folder Supplements is used for remarks about repairs of instruments under test and for calibration data saving of those single standards.

Push the folder Supplements. Following form will appear:

The screenshot shows the 'Instrument Inventory' window with the 'Supplements' tab selected. The window has a title bar 'Instrument Inventory' and a menu bar with 'Multimeters' and a tab indicator '1'. Below the menu bar are three tabs: 'Instrument Inventory', 'Calibrations', and 'Supplements'. The 'Supplements' tab is active, showing a form with the following fields:

- Type of supplement: A dropdown menu with 'Repair' selected.
- Repair No.: A text box containing '1'.
- Inventory serial No.: A text box containing '1'.
- Date: A text box containing '5.2.2002'.
- Current time: A text box containing '5.2.2002 7:55:08'.
- Comment: A text box.

Below the form is a large text area labeled 'Content' with the following text:

```
Failure on current ranges. Meter doesn't measure.
Fail internal fuse 30A.
Fuse was exchanged. New calibration done.
```

At the bottom of the window is a toolbar with icons for navigation, search, and a 'Preview' dropdown. To the right of the toolbar are checkboxes for '1 record' (checked) and 'List' (unchecked), and buttons for 'Browse' and 'Close'.

Repair

Select item Repair in the field Type of supplements. Push the button "+". Fields for remarks and for comments is accessible for typing now. You can enter any text comments related to the repair of active instrument. After finishing you can save it or cancel.

Note: Folder Supplements/Repair is in fact single text editor.

Standard data

Select item Standard data in the field Type of supplements. Push the button "+". Fields for entering of calibration data of external standard are prepared for typing values. Following fields are available (standard of inductance is used as sample):

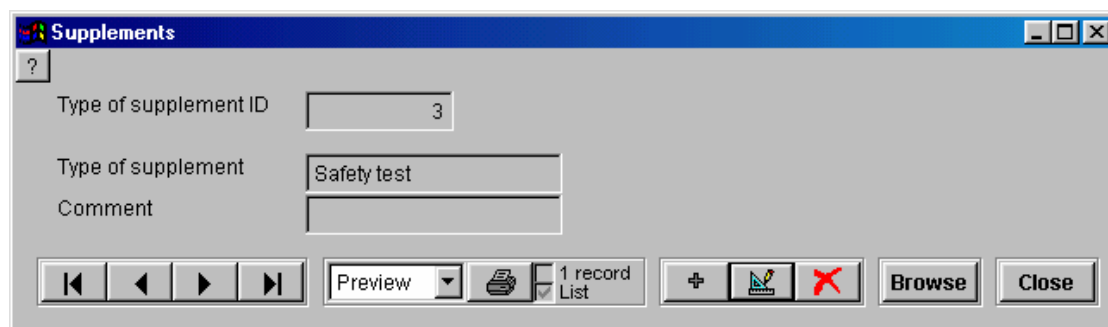
- Nominal value of standard, 0.1 (H)
- Calibration value 0.1002 (H)
- Accuracy in % 0.2 (%)
- Comment wire wound coil without core
- Name of standard MTE – L0.1H

After finishing you can save it or cancel.

Note: Folder Supplements/Standard data is in fact table of calibration values.

New type of supplement

New type of supplement can be easily created. Return back to the main menu. Push the button Supplements. Form of types of supplements will appear.



Push the button “+”. Write new type of supplement, for example “Safety test” and save it. New category of supplement is created in database.

Push the button Close, in main menu enter into Instrument inventory, select any instrument and open the folder Supplements. Activate field Type of supplements. New type of supplement is in the list.

5. New calibration

5.1. Preparing

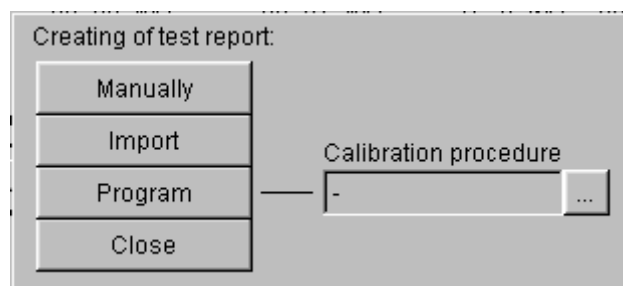
In following chapters calibration of multimeter Metex 3800, calibrated with M-140 Multifunction calibrator, is shown. New calibration performing consists of several steps.

1. Select instrument to be calibrated

Return to the main menu. Push the button Instrument inventory. Select instrument, which you want to calibrate. If the instrument has not its own record in Instrument inventory, create it. When the instrument is selected, open the folder Calibrations.


2. Add new calibration

Push the button with sign "+". Following form will appear.



3. Select method of test report creating

You can import test report, in case it was earlier created. This operation can only import any text file into database.

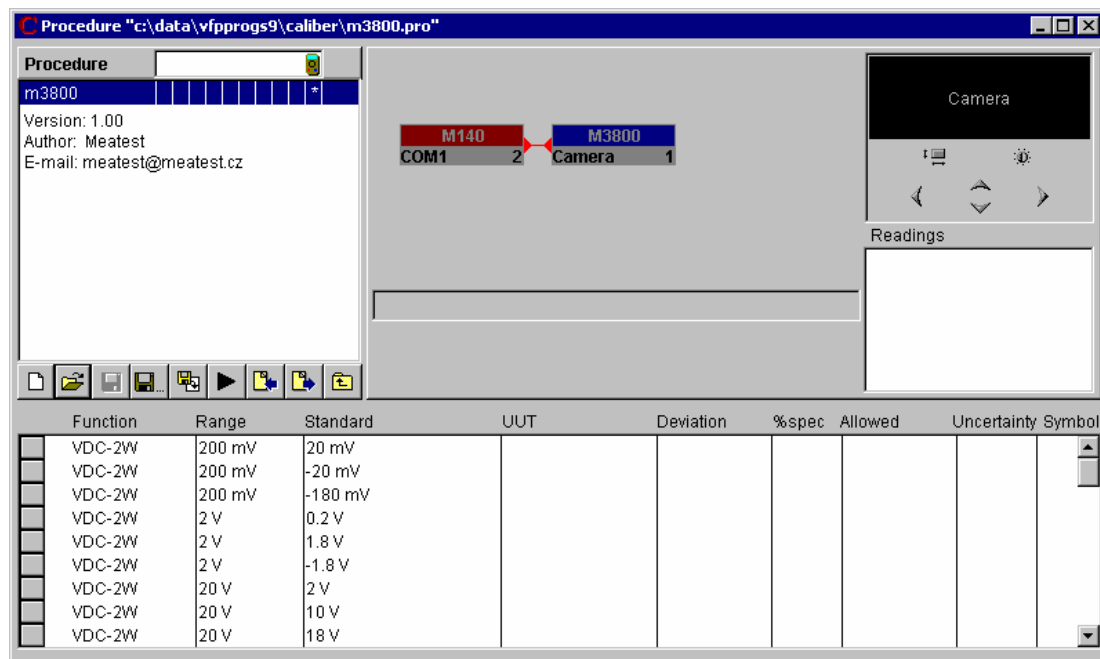
You can create test report manually. Push the button manually. Form of calibration is no prepared for editing. You can write test report manually into the field "Test report". After finishing, save it with button 

You can create test report through calibration module CALIBER. Push the button "..." beside the field with button Program. Form of calibration procedures will appear. Select calibration procedure "M3800". This is procedure for calibration of METEX Model 3800 hand held multimeter with M-140 Multifunction calibrator. Close the form. Name of calibration procedure was written into the field.

4. Start calibration

Before starting new calibration, calibrator has to be connected to the computer and switched on. Use RS-232 line or GPIB interface for remote control.

Push the button Program. Window with CALIBER calibration program is displayed.

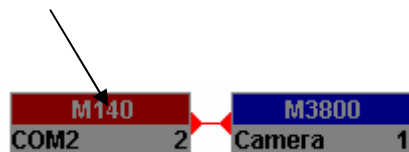


5.2. Calibration process

All parameter setting is now determined with selected calibration procedure. In the bottom part you can view list of calibration points.

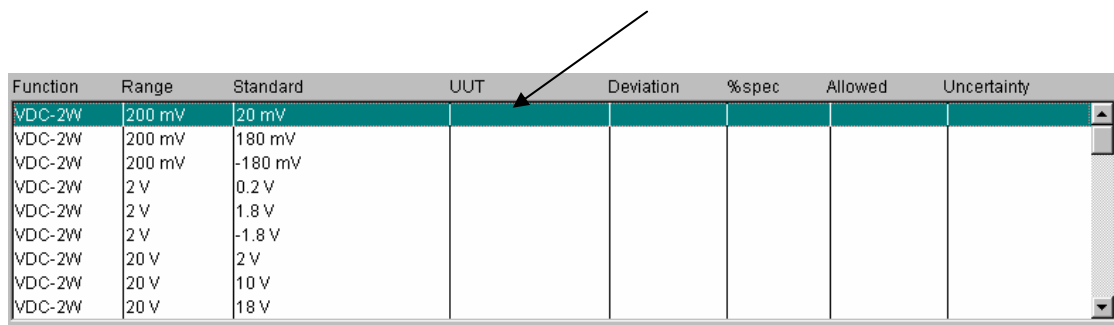
Launch calibration process

Check, if type of remote control of the calibrator corresponds to the real connection. Place mouse cursor on the name of calibrator and push right mouse button.



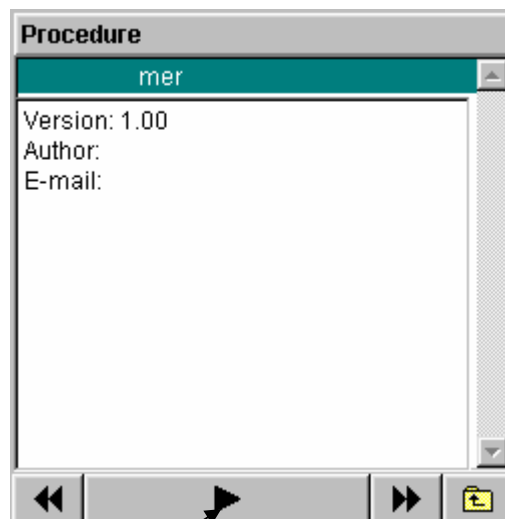
Chose Configure instrument from the menu. Set in both fields Instrument response and Instrument control RS-232, if calibrator is controlled via RS-232. Set in both fields Instrument response and Instrument control GPIB, if calibrator is controlled via GPIB. Place mouse cursor on the gray field with name of interface and push right mouse button.

In the same menu can be configured interfaces (GPIB, RS232, VISA).



Function	Range	Standard	UUT	Deviation	%spec	Allowed	Uncertainty
VDC-2W	200 mV	20 mV					
VDC-2W	200 mV	180 mV					
VDC-2W	200 mV	-180 mV					
VDC-2W	2 V	0.2 V					
VDC-2W	2 V	1.8 V					
VDC-2W	2 V	-1.8 V					
VDC-2W	20 V	2 V					
VDC-2W	20 V	10 V					
VDC-2W	20 V	18 V					

Now you can start with calibration. Push arrow button. Calibration is started from the calibration point in active row.



After calibration is launched, following procedure is automatically performed:

- Follow comments in the middle of the screen. You are asked to connect multimeter with calibrator, Do it.
- Confirm it by pushing ENTER.
- You can see red line with arrows right side to the instrument names, if interface works properly.
- You are asked to switch multimeter to the calibrated function and range. Here the first calibration point is DC voltage, range 200 mV. Set switch on the multimeter to this position. Connect multimeter to the Hi-Lo output terminals on the calibrator.
- Confirm it by pushing ENTER.
- Calibrator is set to the first value, i.e. 20 mV DC.
- You are asked to enter reading on the multimeter. Do it. Use basic units, i.e. V.
- Result of the calibration in the first point is calculated and appropriate values are written into empty columns in the test report table. Currently set and measured values are displayed in right window "Readings".
- Program is going on with the second calibrated point.
- Calibrator is set to the first value, i.e. 180 mV DC.

- You are asked to enter reading on the multimeter. Do it. Use basic units, i.e. V.

In this way calibration continue automatically. If program need change connection of terminals or switch to another range, appropriate message is displayed on the screen.

Stop calibration process

You can anytime to interrupt calibration process. Press the button ESC. Calibration is stopped. Push the arrow button again. Calibration is going on.

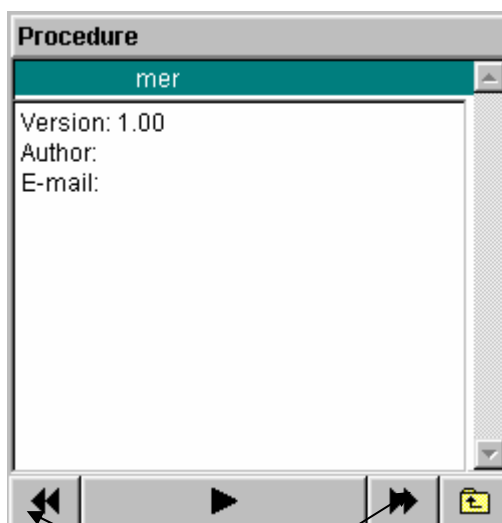
Go to in calibration process

When calibration process is interrupted, you can continue from arbitrary calibration point in the list of calibration point.

Place mouse cursor to the row with 10 VDC calibration and press left mouse button. Row is getting active. Press arrow button to continue. Calibration starts with further calibration from newly selected point. All previous measurements will stay in test report.

Repeat calibration point

If you seem, calibration in any point is suspicious, you can repeat it very easily. Stop



calibration by pushing the button ESC. Place mouse cursor on row with calibration point, which is to be repeated and press left mouse button. Row is getting active. Push arrow button to continue. Calibration in selected point is repeated. New results are written to the test report table and overwrite the old.

To move among calibration points in the table you can use either double arrow buttons, or slider left side the table.

Note: Notice, that according to active row in the table, also structure of calibration procedure is displayed in left status window.

Close calibration

Calibration can be closed either after finishing or during interrupting. Push the button ESC to stop calibration. Click on the cross button in the right upper corner. Calibration form will disappear. Form of calibration is displayed and results of calibration are transferred into the field Test report. You can edit it in the window and save it by pushing appropriate button



or cancel calibration by pushing the



button

Note: CALIBER creates test report every time, it is run. If calibration was stopped by user before end of calibration and return to WinQbase was performed, message “Canceled by operator” is appended into the test report

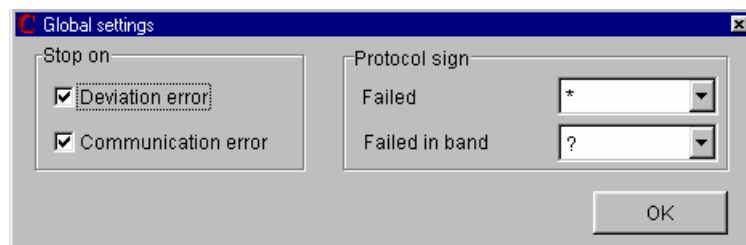
Note: During calibration, you can work in WinQbase. Information that calibration of any instrument is in process is displayed in Calibrations folder (red label “Calibrating ...”).

5.3. Parameter modification

After selecting calibration procedure and starting CALIBER some of parameters can be modified either before launching calibration process or during interruption.

Place mouse cursor onto green row with label “mer” in left window Procedure and push right mouse button.

You can tick or not tick, if calibration will be terminated, when communication error occur or



when large deviation of calibrated instrument is evaluated. The second thing, you can influence is type of character, which is written into appropriate row in the test report in case, that deviation is out of allowed limits or in case, that result of calibration cannot be judge, because of uncertainty deviation. See Operation manual of CALIBER program for more details.

You can change way of control and scanning standard unit and unit under test as well. Place mouse cursor on the name of calibrator and push right mouse button. Select in both fields Instrument response and Instrument control item "Manual". Calibrator will be controlled manually in calibration process. It means, that all settings of output signals and switching output terminals on and off, you have to do manually. To change setting of calibrator or meter under test, you are asked through messages in the center of screen. Try to perform a part of calibration:

- Run the calibration. Now you can continue in calibration process only manually.
- Do, what program requires, confirm every information by pushing ENTER.
- You are asked to enter "Input instrument value (V)" of M-140. Enter nominal value of the calibrator output 20 mV in volts, i.e. 0,02. Confirm by ENTER
- You are asked to enter "Input instrument value (V)" of M3800 (unit under test). Enter reading of the meter in mV. Confirm by ENTER
- The first row in Test report table is calculated. You can continue the calibration or abort it.
- To abort, press ESC.
- Close calibration window by pushing cross button. Program returns to WinQbase, imports test report and displays it in appropriate window. You can edit calibration test report, temperature, humidity, date of calibration if necessary and calibration period, or/and save calibration record.

Much more easily is to perform calibration with remote control of M-140. However, method of manual control can be used in general for calibration of any type of meter.

Note: When CALIBER program is used as alone standing calibration program, outside WinQbase, more parameters can be modified directly before calibration. Similar modification is accessible also under WinQbase, but you have to enter from main menu, see next chapter.

Note: When using of CALIBER program outside WinQbase is required, it is necessary to install CALIBER program into a new directory. Use installation CD ROM.

6. Calibration procedures


6.1. Form of procedure

Calibration procedure is a record in database, where all parameters of calibration procedure are saved, like list of calibration points, types of instruments, which take part in calibration, way of control, parameters of calibration uncertainty evaluation, etc. You can view, edit and create new calibration procedures.

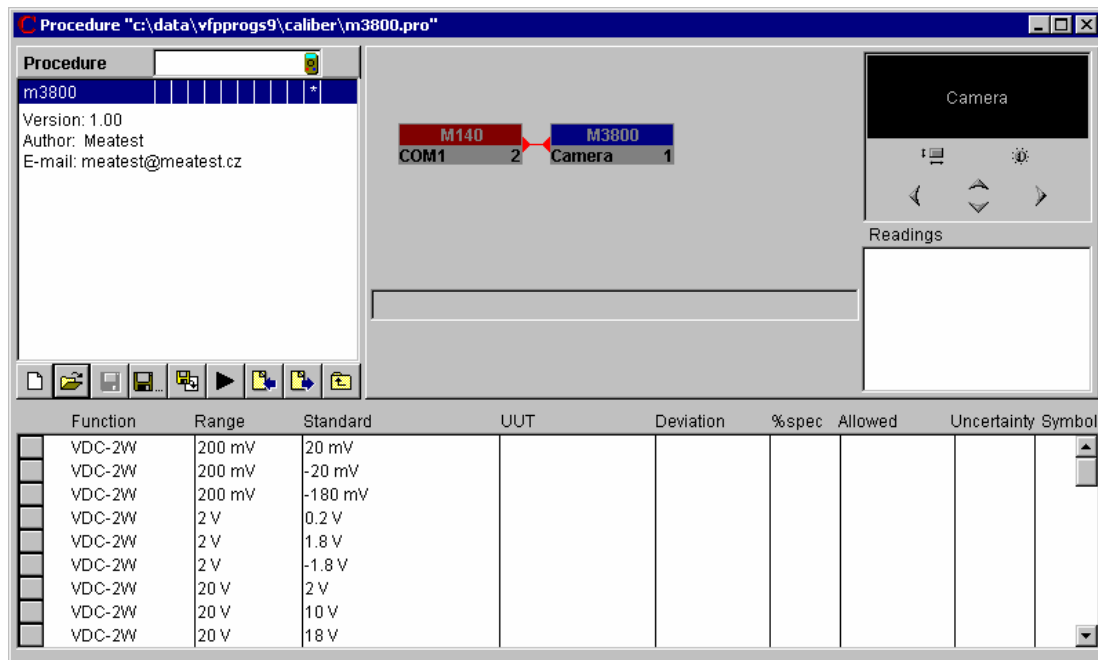
Go to the main menu. Push the button Calibration procedures. Following screen will appear:

In the window you can see content of calibration procedure and some additional information like date of creating, name of author, name of procedure as well. You don't need to know internal commands.

6.2. Edit procedure

Push the button Browse. List of calibration procedures is displayed. Chose procedure "M3800" and push ESC. Selected procedure is active. You can edit the procedure. Push the  button.

Engine for calibration procedure creating and editing is started and window of CALIBER calibration procedure is displayed with loaded procedure M3800.

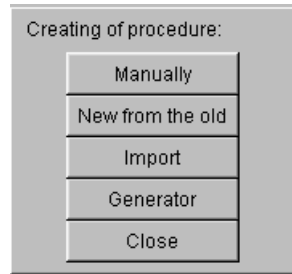


Now you can add calibration point, range or function. To change calibration point, place mouse cursor on appropriate row in list of calibration points. Row gets green, i.e. it is active. Move with cursor to the status window Value and push right mouse button. Select Modify... from the menu. Box with field for new value entering is displayed. Write in new value and confirm by ENTER. Calibration has been modified in one point. In similar way you can add or delete calibration points. See operation manual of CALIBER for more details. Close CALIBER by pushing cross button. Modified procedure is transferred into WinQbase. You can add any comment. To save it press Save button.

Note: Modifying doesn't create history record. Be careful, when modifying existing calibration procedure. After saving modified version, the original procedure is overwritten.

6.3. Create new procedure

Push the button “+”. Following menu will appear:



You can select from the items:


Manually creation

Only for older calibration modules. There is no use with Caliber module.

New from old

This item enables to copy active calibration procedure and save it under new name. This feature is used for creating of similar calibration procedures.

Push the button New from old. Procedure is copied. You have to enter name of new procedure. Save it by pushing the button Save.

Now push the edit  button. CALIBER program is started. You can modify new procedure.

Import

After pushing the button, you can import calibration procedure as file. Extension of file is *.pre. See operation manual of CALIBER program.

Generator

After pushing the button, generator of calibration procedures is run. You can create new procedure. When CALIBER program is used, Procedure wizard is opened.

Push the button Generator. Form of the Procedure wizard first step is displayed. Follow instructions in CALIBER operation manual, chapter 3.

6.4. Other features of CALIBER

For preparing calibration procedures you need also other CALIBER program modules:

- Instrument cards
- User functions
- Wizard rules

Basic set of all these items is a part of software package. Nevertheless, you can modify them or create new ones. Access to these modules is through Calibration procedures in main menu.

Push the button Calibration procedures in main menu. Select any of calibration procedures and push Edit button. CALIBER program is started and active calibration procedure is loaded. You can edit the procedure or you can work with above listed program modules.

Instrument card

Go to the top menu and select Window. From the menu select Instrument card. Form of Instrument card will appear. Push the button Open and chose Meatest M140 from the list of instruments.

The screenshot shows a software window titled "Instrument card 'c:\data\vfpprogs9\caliber\m140.dev'". It features a left sidebar with an "Instrument" list containing "M140" (highlighted in red) and its details: "Version 1.01", "Author: MEATEST", and "Email: meatest@meatest.cz". The main area has tabs for "Source", "Meter", "Switch", and "Global". Under "Source", there are input fields for "Specification", "% of reading", "% of range", "Absolute", and "Digits error". Under "Meter", there are fields for "Full digits" and "One digit". Under "Switch", there is a "Remote control" section with a "Multiplier" dropdown (set to "not used") and a "Macro" section with "Set" and "Measure" buttons. At the bottom, a "Connection scheme" field is set to "UI,COM". A toolbar at the bottom left contains icons for file operations.

Now you can edit existing instrument card or you can create instrument card of a new instrument. See CALIBER operation manual for more information.

Note: Instrument card of instrument is necessary for any calibration, which the instrument takes part in. Without existing Instrument card calibration procedure cannot run.

Following instrument card contains CALIBER basic package:

Coil x50	Option 130-50 Current coil (MEATEST)
Dat1281 Gen	Multimeter Wavetek/Datron 1281 (WAVETEK)
Hp34401A	Multimeter HP 34401A (HEWLETT PACKARD)
Hp3458A	Multimeter HP 3458A (HEWLETT PACKARD)
Ke2000	Multimeter Keithley 2000 (KEITHLEY)

M109	High resistance decade M-109 (MEATEST)
M120	Multifunction calibrator M-120 (MEATEST)
M120	Multifunction calibrator M-120 (MEATEST)
M130	Multifunction calibrator M-130 (MEATEST)
M133	3 – phase power calibrator M-133 (MEATEST)
M140	Multifunction calibrator M-140 (MEATEST)
M142	Multifunction calibrator M-142 (MEATEST)
M150	Current calibrator M-150 (MEATEST)
M612	RTD simulator M-612 (MEATEST)
P110	AC/DC source P-110 (MEATEST)
M1t380	Multimeter M1T380 (METRA)
M3800	Hand held multimeter Metex 3800 (METEX)
M3850d	Hand held multimeter Metex 3850D (METEX)
M3860d	Hand held multimeter Metex 3860D (METEX)
M3870d	Hand held multimeter Metex 3870D (METEX)
Dm311	Multimeter Gold Star DM311 (GOLD STAR)

Close the window by pushing the cross button.

User functions

Go to the top menu and select Window. From the menu select User functions. Form of User functions will appear. Push the button beside field Function. List of available function is displayed.

Function: *P-AC

Function name: P-AC Unit: W ☐ Has polarity

Quantity: ☒ Relative Evaluation: ☐ Relative

☐ Absolute ☒ Absolute

BMC [%]:

Parameter name	Unit
Voltage	V
Current	A
Frequency	Hz
Phase	°

Now you can edit existing functions or you can create new ones. See CALIBER operation manual for more information.

Note: Function definition is necessary for any calibration, where the function is used. Without definition of the function calibration procedure cannot run.

Following functions contains CALIBER basic package:

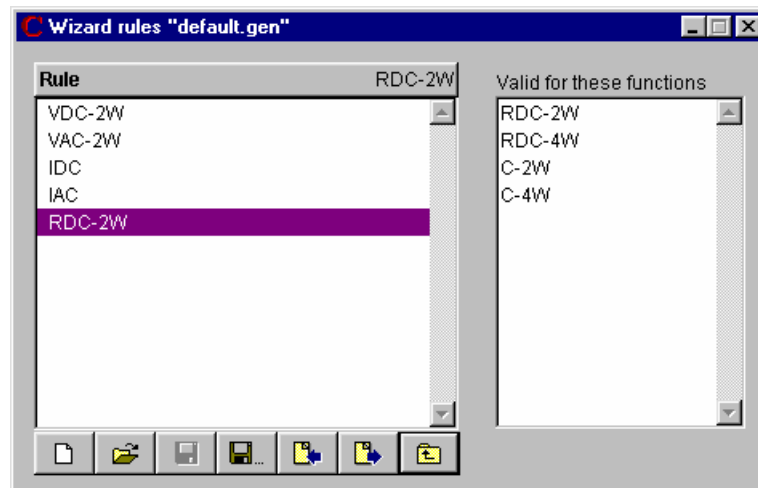
*VDC-2W	two – wire DC voltage
*VAC-2W	two – wire AC voltage
*IDC	DC current
*IAC	AC current
*RDC-2W	two - wire DC resistance
*RDC-4W	four - wire DC resistance
*C-2W	two - wire capacity
*FREQ1	Frequency
*FREQ2	frequency with amplitude as parameter
*RAC-2W	two – wire AC resistance with frequency as parameter
*RAC-4W	four – wire AC resistance with frequency as parameter
*VDC-4W	four – wire DC voltage
*VAC-4W	four – wire AC voltage with frequency as parameter
*C-4W	four – wire capacity
*P100 D90	Pt 100 temperature sensor, ISO standard, ITS90
*P100 U90	Pt 100 temperature sensor, US standard, ITS90
*P100 D68	Pt 100 temperature sensor, ISO standard, PTS68
*P100 U68	Pt 100 temperature sensor, US standard, PTS68
*P200 D90	Pt 200 temperature sensor, ISO standard, ITS90
*P200 U90	Pt 200 temperature sensor, US standard, ITS90
*P200 D68	Pt 200 temperature sensor, ISO standard, PTS68
*P200 U68	Pt 200 temperature sensor, US standard, PTS68
*P500 D90	Pt 500 temperature sensor, ISO standard, ITS90
*P500 U90	Pt 500 temperature sensor, US standard, ITS90
*P500 D68	Pt 500 temperature sensor, ISO standard, PTS68
*P500 U68	Pt 500 temperature sensor, US standard, PTS68
*P1000 D90	Pt 1000 temperature sensor, ISO standard, ITS90
*P1000 U90	Pt 1000 temperature sensor, US standard, ITS90
*P1000 D68	Pt 1000 temperature sensor, ISO standard, PTS68
*P1000 U68	Pt 1000 temperature sensor, US standard, PTS68
*N100 S90	Ni 100 temperature sensor, ITS90
*N100 S68	Ni 100 temperature sensor, PTS68
*N1000 S90	Ni 1000 temperature sensor, ITS90
*N1000 S68	Ni 1000 temperature sensor, PTS68
*TC R S90	TC temperature sensor type R, ITS90
*TC R S68	TC temperature sensor type R, PTS68
*TC S S90	TC temperature sensor type S, ITS90
*TC S S68	TC temperature sensor type S, PTS68
*TC B S90	TC temperature sensor type B, ITS90
*TC B S68	TC temperature sensor type B, PTS68
*TC J S90	TC temperature sensor type J, ITS90
*TC J S68	TC temperature sensor type J, PTS68
*TC T S90	TC temperature sensor type T, ITS90
*TC T S68	TC temperature sensor type T, PTS68
*TC E S90	TC temperature sensor type E, ITS90
*TC E S68	TC temperature sensor type E, PTS68
*TC K S90	TC temperature sensor type K, ITS90
*TC K S68	TC temperature sensor type K, PTS68
*TC N S90	TC temperature sensor type N, ITS90
*TC N S68	TC temperature sensor type N, PTS68
*P-DC	One phase DC power
*P-AC	One phase AC power
*P-DC3	Three phase DC power

*P-AC3	Three phase AC power
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Close the window by pushing the cross button.

Wizard rules

Go to the top menu and select Window. From the menu select Wizard rules. Form of Wizard is displayed. Push the Open button and select “default” by double click. List of rules is displayed.



Now you can edit existing rules or you can create new ones. See CALIBER operation manual for more information.

Note: *Wizard rules are necessary for calibration procedure generation.*

8. Calibration certificate

Calibration certificate is related to the instrument calibration. Access to the calibration certificates is from folder Calibrations in item Instrument inventory of main menu.

Push the button Instrument inventory in main menu. Select an instrument with at minimum one calibration. Open its Calibration folder. In the fields and in Test report memo box should appear recorded values and texts. Go to the bottom of them form.

Preview

Find field with types of printing and select Preview. Push the button with printer icon. Preview of whole calibration certificate will display. You can go through all pages, but you cannot edit them here.

Structure of calibration certificate is fix. It consists of:

- First page. It contains data about calibrated instrument, calibration laboratory, date, etc. Form of the first page can be changed. Only items from codebooks can be included to the form. Item can be removed and added, but only item of codebooks.
- Second page. It contains conditions of calibration. Only items from codebooks can be included to the form.
- Third and next pages. They contain test report. Test report is created by calibration program CALIBER.

Push the cross button in upper right corner. Preview disappears.

Printer

Find field with types of printing and select Printer. Push the button with printer icon. Calibration certificate is printed on default printer.

Note: In case there are several printers connected to the computer, Windows default printer is used. If you need change printer for printing from WinQbase, you have to tick it in Windows as default printer.

File

Calibration certificate can be exported as a file in default printer format. You can save the file and print later. This file is not text file.

Export and Import

Functions Export and Import are used for exporting and importing form of calibration certificates. It cannot be used for exporting of whole calibration certificate.

You can use several types of calibration certificate forms, with different contents, fix texts, variables, etc. Exported file is in database format. This function can be used for transferring of forms among computers or laboratories. For more detailed information see Operation manual WinQbase.

Modify calibration certificate

Calibration certificate can be modified according to your needs. Find field with types of printing and select Modify. Push the button with printer icon.

Edit window for calibration certificate modification is displayed. Following operation are allowed:

- Remove fix text
- Add fix text
- Copy text
- Remove variable, i.e. item as record from codebook
- Add item, i.e. category of codebook
- Copy item
- Add or remove picture. Only one picture can be inserted into first page as OLE object.
- Change colors and fonts
- Change position of objects

To remove an object from the form, sign the object with clicking left mouse button. Then push right mouse button and select item Cut. Object will disappear.

To add a fix text object, click on button “A”. Place mouse cursor on the requested area, push left mouse button and write text.

To add codebook variable, push the button “ab”. Place mouse cursor on the requested area, push left mouse button and select from the list of codebooks desired variable.

To add a picture, you have to import it into database. New head should be created too.

Push Edit button in folder Calibrations and button Parameters. Select Test report head and push the button “...”. Form of Test report head will appear. Push the button “+” to create new head and write your text into three rows in the test report head. Push the button Insert. Window for searching requested picture is displayed. Format of picture must be of those type, which is supported with Windows operation system. Formats bmp, pcx, doc, etc. are suitable. Confirm by OK and save new test report head. After saving, push the button Preview. You can see inserted picture. To change its position or size, go back, chose Modify and Push the button Printer. You can see here gray frame instead of life picture, which represents inserted picture. You can move it, change size, etc.

Note: Picture can be of whole page size and it can create background of the first page.

Notice, that for each calibration you have to chose Parameters of test report (also Test report head). The calibration certificate is printed always in this form.

In general, you can insert the picture directly in Modify menu. This procedure is not recommended, if you are using the database in computer network.

9. Codebooks

In inventory of instruments and calibrations, many of items have to be selected from their codebooks. Access to the codebooks is from main menu. However, to the codebooks you can enter, edit them or create new record also in Instrument inventory folder and in Calibrations folder. Presence of codebook is always signalized with “...” button beside the field, which is related a the codebook.

From the main menu you can enter to the following groups of codebooks:

- Inventory parameters, where codebooks related to the instrument and sorting inside database are accessible:
 - Manufacturer
 - Model
 - Customer
 - User item 1
 - Type of inventory
 - Quantity
 - Category
- Test report parameters, i.e. codebooks with text, which will be filled into the calibration certificate or which is related to the calibration:
 - Test report head
 - Methodology
 - Technical note
 - Range of calibration
 - Chief
 - Type of report
 - Calibration result
 - Others
- Groups of instruments. It forms basic sorting of instruments.
- Supplements. Types of supplements are recorded here.
- Calibration procedures. It contains database of calibration procedures.

To edit or create new record in codebook, select requested group of codebooks. To edit Test report parameters, push the button with the same name in main menu. Select from the menu for example Methodology. Form of active record is displayed. Use standard buttons to edit record or create new one. Don't forget to save new modification before leaving the form.

10. Users

The item contains two folders

Users

Function Users contains list of users with their passwords and levels of access.

Push the button Users in main menu. Form with folder User will appear.

Push the button browse. Table with list of users is displayed. Close the table.

Add new user. Push the button “+”. Fields for typing are getting white. Type User name, his password, comment if required and tick level of access for the user.

Login and logout

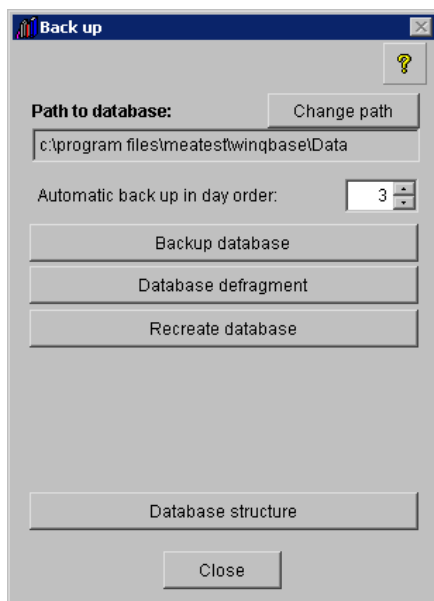
Open the folder System logs. Form of login and logout will appear.

Push the button Browse. You can view persons, who have been worked with program, date and time of login and logout. No edit function is available here.

11. Back up

Function is aimed for backuping of database and setting the path to the currently used database.

Push the button Back up from the main menu. Following screen will appear:



Back up

Push the button Backup database. Form for setting drive and directory, to which database will be saved, is displayed. Select drive/directory. Confirm with OK. Database is packing and saving into selected directory.

Note: Name of backup file is fixed and cannot be changed. It is "qbase.pck"

Recreating

With this function you can recover database from backup file. Only backup file, created with previous function is accepted.

Push the button. Select file "qbase.pck" in directory where it was saved in previous step. Confirm by OK. Backup file is loaded and decompressed. After loading, restart of WinQbase is requested. Restart WinQbase.

Database defragment

This function serves for minimizing necessary space for database on hard disk. See WinQbase operation manual for more details. Confirm with OK. Database is packing and saving into selected directory.

Change path

This is very important function. Here you can change path to the database files. In general, you can use more databases, but it is recommended to use only one.

Note: *Notice, that to enter the path you are asked during first launch of WinQbase.*

Note: *Be very careful, when changing the path, not to lose calibration data.*